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# THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

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PATRON—HIS MAJESTY THE KING.

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## TRANSACTIONS AND PROCEEDINGS OF THE SOCIETY.

Some of the early volumes of the Society's Transactions are out of print. Any single volume of the years 1868-1887, is sold at 10s. to Fellows. The volumes for 1868-1900, in sets of not less than five, as well as the five of the Third Series (1862-1867), can be obtained by Fellows at greatly reduced prices on application to the Secretary. The following is a price list of recently published parts—

- 1933.—Transactions, Vol. LXXXI: Part I, £1 4s. 0d., to Fellows, 18s. 0d.; Part II, £1 4s. 0d., to Fellows, 18s. 0d.  
Proceedings, Vol. VIII: Part I, 6s. 0d., to Fellows, 4s. 6d.; Part II, 12s. 0d., to Fellows, 9s. 0d.
- 1934.—Transactions, Vol. LXXXII: Part I, £1 10s. 0d., to Fellows, £1 2s. 6d.  
Proceedings, Vol. IX: Part I, 4s. 0d., to Fellows, 3s. 0d.

### STYLOPS.

- 1932-3.—Vols. 1-2, £1 16s. 0d.; to Fellows, £1 7s. 0d.
- 1934.—Vol. 3, subscription rate £1 4s. 0d., to Fellows, 16s. 0d.; monthly parts 3s. 0d. each, to Fellows, 2s. 0d.



THE PROCEEDINGS  
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VOL. IX.

1934.

Wednesday, 7th February, 1934.

Dr. S. A. NEAVE, O.B.E., President, in the Chair.

*Vice-Presidents.*

The PRESIDENT announced that he had nominated Professor W. A. F. BALFOUR-BROWNE, F.R.S.E., F.L.S., Sir THOMAS HUDSON BEARE, F.R.S.E., and Dr. V. B. WIGGLESWORTH as Vice-Presidents for the year.

*Election of Fellows.*

The following were elected Fellows of the Society :—RICHARD ESTLIN HALL, B.Sc., 30, Murray Road, Wimbledon, S.W.19; GEOFFREY JOHN KERRICH, B.A., Junior Curator, Museum of Zoology, Cambridge; GEORGE COPLEY VARLEY, B.A., Department of Entomology, Cambridge; ANTHONY EDWARD WELCH, 20, Tanza Road, N.W.3.

*Exhibits.*

The following communications were then made to the meeting :—

***Oxyptoda filiformis* Redt. recorded from Britain.** By H. St. J. K. DONISTHORPE.

Two specimens of *Oxyptoda filiformis* Redt., a beetle new to Britain, were exhibited. They were taken in Windsor Forest on 1st Oct. 1933, when sifting straw refuse and at once recognised as a species not previously taken there. With the assistance of Dr. M. Cameron it was determined as *O. filiformis*, a species not previously recorded from Britain. It is recorded from Germany, Austria, Hungary, Croatia and Turkey in moss, twigs, straw, sweepings, etc., but it is always rare.

**Phenological Records.** By Maj. H. C. GUNTON.

In February 1921 I gave some preliminary results of the phenological records which I had kept during the previous few years. The present results are a continuation of the observations from that time onwards. In 1925 I plotted a diagram which shows the overall lives of the species from the earliest to the latest observations

available in my note book, with a note as to the years in which the earliest appearances were noted. I find this diagram a useful reminder of the periods within which species are liable to be seen. No season subsequent to 1925 has made revision of this diagram so necessary as 1933. I feel very strongly that those of us who pursue the study of entomology, as amateurs, have opportunities, perhaps not fully grasped, of helping those who are engaged in that subject professionally, and that if we were to collaborate more fully in getting systematic records in forms which would facilitate their assimilation we could make really valuable contributions. My convictions were strengthened by reading the paper by Mr. Uvarov on "Insects and Climate" read 5th November, 1930, and printed in 1931, *Trans. Ent. Soc. Lond.*, 79. The following are brief extracts :—

- (a) Climate is the ever present, if not always the dominant factor in an insect's life.
- (b) An insect living under natural conditions is not only exposed to one isolated climatic factor but to the continually changing combinations of several.
- (c) All the more usual combinations of factors should be studied. Unfortunately very little work has been done in this direction.

Before proceeding with the plotting of further diagrams I have, through the courtesy of Mr. Fryer, been in communication with the Rothamsted Experimental Station and found that considerable importance is attached to systematic records of the kind which I have described, and that the Lepidoptera are considered to be the most suitable medium for the study of relationship with climatic conditions owing to the relative facility of identification and the great variety of their life-histories.

As the result of consultation with Dr. Williams, head of the Entomological Department at Rothamsted, I have selected 50 common species, have averaged the dates of appearance and have plotted them on a diagram which also includes the average dates for willow blossom, larch, elm and oak foliage and ivy blossom which I have always found useful plant indices.

On prints from this diagram the earliest dates for particular years can be plotted. There is no difficulty with regard to the meteorological particulars. The monthly reports of the Meteorological Office and the Phenological Reports issued by the Royal Meteorological Society contain the particulars referable to districts and localities which are applicable to the entomological observations. As examples I have plotted from these sources the monthly excesses and deficiencies of temperature and the corresponding weekly temperatures and also the average and actual accumulated temperatures.

In trying to appreciate the conditions which govern emergence the other factors already referred to must also be taken into account, consideration being given to a prior period of some duration as well as to the time of emergence.

These diagrams are, at this stage, sure to contain inconsistencies and inaccuracies, some of which are obvious. For instance, accuracy must depend on the climatic conditions of the moment, unsuitable conditions such as bad weather or bright moonlight militating against the observation of insects which have already emerged. On the other hand it is not to be expected that the different species will respond in the same way and in the same degree to the variations of a season, for



climatic conditions must affect them differently, not only having regard to the state of development in which they encounter these conditions, but also to the degree of exposure involved by their habits. Obviously a bare pupa differs in this respect from one in a cocoon and each would differ according to whether it was fully exposed to the atmosphere or partially protected by leaves or the roots of herbage or buried in the earth at a certain depth. Similar considerations apply to other periods of the insect's life.

It will be evident that there are many directions in which to probe if once we can get our facts right and it is on these facts that we should first concentrate. It cannot be done by a single observer. If, however, a sufficient number of observers volunteered we should, in time, arrive not only at approximately accurate district diagrams but we should be able to arrive at local diagrams corresponding to the same localities as those used by the meteorological authorities, and, looking still further ahead, arrive at diagrams of the different life stages in the natural state of insects of different habits. The most I have hoped to do by means of the diagrams placed before you is to indicate a common basis for exploring a wood containing many trees worthy of study.

In conclusion there is one point I should like to make clear: observers would not be required to plot the diagrams although they may find it interesting to do so.

If lists of first appearances are forwarded addressed to me at the Royal Entomological Society, 41 Queen's Gate, S.W.7, they will be compared, co-ordinated, analysed and plotted in consultation with Rothamsted Experimental Station.

Copies of the list of insects will be supplied to those who volunteer to keep records; probably three or four volunteers from a district should be ample.

#### **On an Association between an Ichneumonid and a Tachinid. By D. J. LEWIS.**

Specimens of *Osprynchotus gigas* Kriechb. (ICHNEUMONIDAE) and *Roubaudia rufescens* Vill. TACHINIDAE, collected at Gadau in Northern Nigeria in July and August 1933 were exhibited. The former was very common at the beginning of the rainy season, and on two occasions a female was seen indoors being followed at a distance of about six inches by the fly (once a male and once a female). The latter kept its distance as if attached to the Ichneumonid by an elastic cord, hovering or flying slowly behind the larger insect. Once the fly followed the Ichneumonid for ten minutes and then the two flew independently for fifteen minutes, often passing within a foot or two of each other. The fly suddenly reduced its speed and began again to follow the slowly-moving Ichneumonid.

In his studies on the African social wasps, Roubaud \* records that *R. rufescens* parasitises *Belonogaster* and *Icaria* in the Congo. He mentions the difficulty experienced by the female *Roubaudia* in approaching the nests of these wasps which sit in clusters outside. The fly avoids the wasps either by means of its high speed or by waiting till they are temporarily inactive or absent from the nest. It would be interesting to know why *Roubaudia* was following the Ichneumonid, which is a parasite of solitary wasps (*Eumenes*). Perhaps it is in the habit of following *Osprynchotus* as another means of approach to the nest and mistakes this insect for the large Vespid.

\* 1924, *Ann. Sci. Nat. (Zool.)* 7: 197-248.



**The Swarming Habits of some West African Diptera.** By D. J. LEWIS.

Specimens of *Thrypticomys seychellarum* Edw., a Tipulid with white tarsi, collected at Freetown in September 1933, were also exhibited. From one to five individuals of this species were frequently seen hanging from spiders' webs. They held their wings and legs outstretched, and, since they were always seen against a dark background, a stream, the eaves of a house, or the roots of trees, their white tarsi were very conspicuous. Also they jumped up and down on the web. If driven away, the insects often returned to the web, flying up and down till their anterior legs became attached. Pairing occurred when the flies were hanging from the web.

*Milichiella* sp., a small fly in which the upperside of the abdomen has the appearance of silver, was commonly seen at Gadau from May to August, the males flying in groups of about fifty at the bases of Baobab trees (*Adansonia digitata*). The climate in May was hot and dry, the temperature being often in the region of 40° C. (104° F.) for several hours and the relative humidity often falling below 10%. Many insects such as ants and termites remained below ground throughout the day, yet these flies swarmed only in sunshine. They remained on the sunny side of the tree, moving round from east to west and keeping their position regardless of the direction of the wind. The position of the swarm evidently does not depend on reflected light from the tree trunk, since swarms were observed against a black iron post.

*Milichiella argentea* F. closely resembles the above species and was daily seen swarming at Freetown in September 1933. The swarms, consisting of ten to fifteen flies, were never seen near trees but always against the walls of a house (the Sir A. L. Jones Laboratory) about twenty feet from the ground. The swarm travelled from east to west a distance of about one hundred and sixty feet, always being opposite the place at which the rays of the sun were most nearly vertical to the wall. The swarm, therefore, moved slowly round the angles of the house. Photographs showed the position of the swarm against the brightest part of the wall. At midday, when the sun was almost vertically overhead, this position was dependent on the extent of the eaves.

I have to thank Sir Guy Marshall, who very kindly arranged for these insects to be identified.

Prof. P. A. BUXTON referred to his observations on Tipulids of the genus *Trentepohlia* Big. in Samoa.\* He said that several species habitually sit in dark places in the forest, for instance, between buttress roots, and often large numbers are found close together. Frequently an area of bark seems to shimmer owing to the numbers of *T. pacifica* Alex., a species with whitish markings on the legs, which stand and sway themselves on it.

Certain spiders have the same habit of swaying in their webs and also resemble the Tipulids in colour.

**Colour variation of *Triatoma rubrofasciata*.** By J. D. GILLETT.

Four adult specimens of *Triatoma rubrofasciata* were exhibited showing a colour variation of the pronotum due to lack of pigment. The first was a normal adult,

\* 1928, *Proc. ent. Soc. Lond.*, 2: 65.



in which the pronotum was quite black except for a reddish margin. In the second the pronotum was divided transversely into two almost equal portions, the anterior portion being black, and the remaining portion reddish-orange. He said that he had found that approximately 14% of the adults were of this form (having made the observations from about 60 insects), although in many of them the reddish-orange portion was much darker than that of the one shown; in fact, in some it was little more than a very dark brown.

The other two insects had, in addition to the reddish-orange portion on the pronotum, other differences of colour. One having a pink patch on the wing, and the other being quite normal down the whole of the right half, but on the left it had a large pink patch on the wing, one orange leg, and instead of the pronotum being divided transversely, it was divided longitudinally into two almost equal portions, the right, the normal side, being black, and the left reddish-orange.

Two of the insects shown had also a reddish apex to the scutellum. In Patton and Cragg's *Text Book of Medical Entomology*, 1913, the scutellum was described as having the apex occasionally reddish, but no reference was made to the striking colour variation of the pronotum, it being described as being dark brown to black.

The insects on which the observations were made originally came from Assam in 1927, and since that date they had been kept at a constant temperature of 23° C.

**A remarkable new Dipteron from Kenya Colony.** By Sir GUY MARSHALL, C.M.G., F.R.S.

Two specimens of a very remarkable new Dipteron found in Kenya by Mr. H. B. Sharpe in a cave frequented by bats and swifts were exhibited on behalf of Dr. V. G. L. van Someren. The insects bear an extraordinary superficial resemblance to NYCTERIBIIDAE, to which they are, however, in no way related, as they have a large fleshy proboscis and rudimentary wings. Major E. E. Austen suggests that the species may belong to the DRYOMYZIDAE, but that probably a new family may have to be erected for it.

Prof. P. A. BUXTON remarked that an affinity with the DRYOMYZIDAE had been suggested. The aberrant *Neottiophilum* is a member of that family, or closely related thereto, and its larva is a blood sucker, living in birds' nests. It might be well to search the swifts' nests in the cave, in the hope of finding the larvae of the remarkable fly which was exhibited.

**Separation of Lice from Hair, Wool or Feathers.** By Prof. P. A. BUXTON.

Keratin (which is the principal constituent of hair, wool and feathers) is soluble in alkaline solutions of sulphides. As the material goes into solution, the alkalinity drops, and it appears that the  $p_H$  should be maintained at or beyond 11.0. In practice it is not easy to measure the  $p_H$ , for the solutions are coloured and turbid, but one can find an empirical formula which gives satisfactory results: it seems that the best proportion is 2% sodium sulphide and 2% potassium hydroxide in water. The material should be put in this solution and boiled or set in a bath of boiling water. A large volume of solution must be used; 200 cc. of the above per gram of hair is sufficient. The material must be maintained at or near boiling

point until it filters readily. Whatman's No. 3 paper allows very quick filtration and is resistant to the solution.

The same technique has been applied to feathers, and even the stiff "rhachis" or mid-rib of the feather dissolves readily. But the basal part of feathers of many birds contains a black pigment which is not altered, and which makes it impossible to see the lice when all the feather has been dissolved. A method of overcoming this difficulty is described below. The same solution readily dissolves a flannel shirt, but the lice will be found tangled up in the cotton threads which were used for stitching the garment together. It is desirable, therefore, to find a solvent for cellulose which would not attack chitin.

If the hair or other material contained lice, they can be found on the filter paper. The external skeleton is not touched by the solution and the insects are not rendered brittle, but they are transparent and difficult to see. It is best, therefore, to wash them off the filter paper with a stream of distilled water and stain them in eosin. It is found that other stains, for instance fuchsin and carmine, are destroyed by the traces of reagent which remain in the specimens. The black pigment, which is so abundant in black hair or feathers, will not pass through even a coarse filter paper. In this case it is best to remove the lice from the solution by flotation. After the hair has been dissolved by heat, the liquid is put in a stoppered separating funnel, with liquid paraffin, and shaken. The lice become wet with the paraffin and float up with it, the black liquid remaining below and being allowed to run off through the cock at the bottom of the funnel.

The methods here described have a number of possible applications. They permit one to collect lice with a minimum of trouble from a large sample of material. They should also make it easy to study the changes in seasonal incidence of these insects in populations.

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### Wednesday, 7th March, 1934.

Dr. S. A. NEAVE, O.B.E., President, in the Chair.

#### *Election of Fellow.*

The following was elected a Fellow of the Society:—HERBERT M. LLOYD, 6, Southwood Lawn Road, Highgate, N. 6.

#### *Obituary.*

The death of Mr. R. KELLY, a Fellow of the Society, was announced.

#### *Exhibits.*

The following communications were then made to the meeting:—

**A probable natural Hybrid between the Geometrid species *Erannis aurantiaria* Esp. and *E. defoliaria* Clerck.** By C. N. HAWKINS.

The specimen shown, a ♀, was bred by me from a larva collected amongst others on Wimbledon Common in May or June 1912, and emerged on the 23rd Dec., 1912. It has, very clearly defined, the markings of a *defoliaria* ♀, but the ground-colour is



golden-yellow instead of the usual pale whitish-yellow, and it has partially developed wings 2 mm. in length, whereas those of *defoliaria* ♀ are quite vestigial. I had always regarded it, nevertheless, merely as an abnormal *defoliaria*, but on looking at it again recently it occurred to me that it might be a natural hybrid between that species and *aurantiaria*, and further investigation tends to confirm the latter view. An examination of the genitalia *in situ* seems to me to give no satisfactory results, but if they were dissected out they might show recognisable differences. Fortunately, however, it is unnecessary to rely on the genitalia, as the maxillae afford perfectly good specific characters, not only in *defoliaria* and *aurantiaria* but also in *E. marginaria* Bkh. (*progemmaria* Hb.), the last being a species which might be involved as an alternative to *aurantiaria*. An examination of all three species, and of the suggested hybrid, under a magnification of 120 diameters gives the following results:—In *defoliaria*, the maxillae are rudimentary, .6 mm. in length, white, fleshy looking, covered with minute hairs or spines, not joined together to form a proboscis and not coiled, but projecting quite separately and rather divergent towards the tips. They are difficult to see, being almost hidden amongst the scales of the head. In *aurantiaria* the maxillae are much better developed; 2 mm. in length, yellowish, hairy, joined together to form a sucking tube or proboscis and probably just functional for the purpose of sucking moisture off bark, twigs, etc. The proboscis is usually carried coiled in watch-spring fashion, and when straightened reaches back to between the bases of the front pair of legs. In *marginaria* the proboscis is still better developed, longer, darker (more heavily chitinated), more shiny, with some very minute hairs on the basal portion, and is carried well coiled. In the suggested hybrid the tongue is definitely like that of *aurantiaria* and is quite as long, although the left maxilla is slightly shorter than the right one. The maxillae are joined to form a proboscis but are not coiled, though this may be accidental. The ground-colour is that of normal *aurantiaria* males. In *aurantiaria* females the wings are 3 mm. in length and the colour is a rather dirty grey-brown. All the measurements given for *defoliaria* and *aurantiaria* are subject to slight individual variation according to the size of the specimen, but the variation is so slight that it can safely be ignored for the present purpose. To sum up, this remarkable specimen has the pattern of female *defoliaria*, the ground-colour of male *aurantiaria*, the proboscis of *aurantiaria* and wings 2 mm. in length as compared with the vestigial wings of female *defoliaria* and the 3 mm. wings of female *aurantiaria*. In the circumstances, I think it is a fair assumption that this is a natural hybrid.

#### A Living Tortoise-beetle from Nigeria. By Dr. K. G. BLAIR.

The specimen of *Aspidomorpha cincta* F. exhibited was received from Dr. Guy Morison of Aberdeen. The beetle was captured near Minna, Niger Province, by Mr. G. Wilson in November last. It had been given leaves of privet, dock and dandelion but did not appear to have fed, nor did it take any notice of apple peel. The convex portion of the thorax and elytra, that appear dull reddish-brown in dried specimens is of a uniform bright golden colour, the expanded margins, except for golden bands that cross them, clear, translucent. The colour appears to remain constant whether the insect is active or sluggish, there being no suggestion of the remarkable change of colour that takes place on the insect resuming activity that is observed in the North American *Metriorhiza bicolor* F. Here the golden colour remains



so long as the insect remains quiet, but if excited the thorax becomes a greenish-golden, the elytra purplish-red with a bluish or purple opalescence. As it settles down again this fades away and the gold returns. (See *Proc. S. Lond. Ent. Soc.*, 1928-29 : 74).

**Notes on African Lepidoptera.** By H. C. KENWAY of Pretoria.

Prof. POULTON communicated the following interesting observations extracted from a letter written, 21 January, 1934, by his friend Mr. H. C. Kenway, F.R.E.S. :—

*The attacks of birds upon butterflies.*—"In the days when I knew nothing of these controversies, I had long been convinced that birds are eaters of butterflies. I had so often lain under a tree watching my baits and amusing myself by observing flycatchers, wagtails and other small birds taking Lycaenids and small Pierids that the thing had become a commonplace and I did not consider the possibility of anybody doubting it.

"To give concrete and more recent instances :—In January 1930 at Wonderboom, Pretoria, I watched flycatchers taking *Terias brigitta* Cram. on flowers. The birds sat on a low branch about ten feet distant and every time a butterfly perched on a flower one of the birds shot out and snapped at it. If he missed I heard the click of his bill and he turned back to his perch and sat down again. If he caught it he wiped off the wings against the branch and swallowed the body. I was ten yards away and used a pair of  $\times 6$  prism binoculars, so there was no doubt about it. I afterwards picked up over 30 fore-wings under the branch without searching at all carefully.

"At Eshowe in Zululand in December 1926 I counted 83 fore-wings of *Charaxes druceanus* Butl., *ethalion* Boisd. and *cithaeron* Feld. scattered below a tree in which was a large bird's nest. I did not see the bird and could neither dissect it nor apply emetics or a stomach pump, so that there are three alternatives open to our learned friends. Either (a) at least 44 *Charaxes* shed their wings (as do termites) under the one tree, (b) they formed a suicide club and employed somebody or something to immolate them, or (c) the birds ate them. The tree was not a 'sucking tree,' and I have never seen *Charaxes* frequenting it though I have often looked for them with my field glasses. The nearest *Charaxes* resort is about 100 yards away."

The following note refers to a beautiful drawing painted by Miss Kenway and exhibited to the meeting :—

"The Christmas-card shows the male *Ch. bohemanni* Feld. as he looks when excitedly hunting a nice smelly place in the mud. I wonder whether the *Papilio*-like position of the wings is protective? It seems absurd, but it is only when at a mud puddle such as *P. lyaeus* Dbl. loves that *bohemanni* throws his wings forward like a *Papilio*, so it is just possible that there may be something in it. I have never seen *lyaeus* with mutilated wings suggesting bird attack."

*A carnivorous Sphingid larva.*—"I do not know whether I told you that I actually watched the larvae of *Pseudoclanis postica* Walk. eating one another. It was most interesting. One of the big larvae, after eating his old skin, strolled over to a smaller one which was half out, and nibbled at the loose skin on the middle segments till he came to the portion still adhering, and then proceeded to eat right through him in spite of a valiant resistance."



*The migration of C. florella and other Pierine butterflies.*—"21 January, 1934—For the last four days *Catopsilia florella* F. has been migrating (from S.W. to N.E. as usual) accompanied by a few *Belenois mesentina* Cram. and *B. gidica* Godt.

"7 February.—The flight of *C. florella* has developed in rather an unusual manner. After about ten days I noticed an increasing number of other Pierines whilst *florella* almost disappeared, being gradually replaced by *B. gidica*, *mesentina* and *severina* Cram., accompanied by *Colias electra* L., *Teracolus subfasciatus* Swains. and one or two other Teracoli which I failed to determine.

"The migration only finally petered out yesterday, though the butterflies have been dying all over the place for about a week. From newspaper reports I gather that the flight has been at least 300 miles wide and has lasted about three weeks. I feel sure that the migrants have been reinforced during the flight, as many butterflies are so old and transparent as to resemble *Acraeas*, while others are newly hatched, with all gradations between these two extremes."

**Comments on the discussion of 7 December, 1932, with additional evidence on the efficiency of special protection and warning characters, etc. By H. N. RIDLEY.**

Prof. POULTON communicated the following interesting notes of observations contained in a letter dated 15 June, 1933, from his friend Mr. H. N. Ridley, F.R.S. :—"The picture\* of the viper-like caterpillar is good, but it is even more viperine in look when the 'head' peers over the leaf edge. The discussion † on the attacks of birds, etc., on protectively or warningly coloured insects is also very interesting.

"Only two or three days ago I saw on Holmwood Common the fritillary *Melitaea athalia* Rott., which haunts an open marsh there, fly to a small wood, when from the deep shade of an oak a bird darted out at it. Both bird and insect disappeared in a bramble thicket, but I had no doubt that the butterfly had been captured.

"A common invader of my verandah at Singapore at night was the Zygaenid (CHALCOSIINAE) moth *Pintia sordida* Walk., dark brown purple above with pale blue, white spotted under-wings. Adult geckos ignored it, but one evening I saw a young gecko stalk this moth and seize it by the anterior end so that head and thorax were within the mouth. The gecko quickly opened its mouth and released the moth, which was quite unhurt and walked away, and after cleaning its plumed antennae, head and thorax of the lizard's saliva, flew off. Meantime the gecko rushed away pawing its mouth frantically and shaking its head—a comical sight.

"A small brown Lampyrid beetle ‡ used to fly into light and creep on the verandah ceiling. A young gecko stalked one and was just about to seize it, when the beetle flashed its light and the gecko turned and bolted to the seclusion of the cornice. I have, however, seen apparently the same Lampyrid flying in numbers into the verandah of a house at Penang and captured by spiders, regardless of their

\* 1932-33, *Proc. ent. Soc. Lond.*, 7: pl. I.

† 1932-33, *loc. cit.*, 7: 79-105.

‡ My friend Dr. K. G. Blair suggests that this small Lampyrid may be the abundant Oriental *Luciola vespertina* Fab. and that the larger beetle mentioned below may be a species of *Rhagophthalmus* belonging to the family RHAGOPHTHALMIDAE, allied to LAMPYRIDAE. My friend Mr. C. L. Collenette suggests that the lizard may be the house-gecko—*Hemidactylus frenatus*, common in Singapore. I have also received kind help with the Lepidoptera from my friend Mr. W. H. T. Tams. The behaviour of the Singapore geckos towards the Zygaenid moth affords an interesting comparison with that of the Kuala Lumpur geckos towards a conspicuous Hypsid moth, as recorded by Dr. W. A. Lamborn, O.B.E., F.R.E.S., in our *Proceedings* 1921: vii.—E.B.P.



light. The larval (or female) form of one of the bigger species, very common and ornamented with a row of lights along the sides, used to creep about my bathroom, and my terrier going to inspect it and putting his nose to it, frantically sneezed and rubbed his nose on the bricks to get rid of the smell, which to me was only a faint musky one, like that of the moth *Attacus atlas* L. but fainter.

"One day we gave a monkey a handful of dead mixed butterflies, including Pierids and Danaids. He ate all the insects but left the latter supposed uneatable ones to the last.

"In reference to the nesting association between birds and wasps described in 1932, *Proc. ent. Soc. Lond.*, 7 : 55-6, I remember seeing the nests of Weaver Birds (*Ploceus*) surrounded and defended by wasps' nests near Nompénh, the capital of Cambodia. We had been out for a car drive and the car broke down and had to be towed to the town by oxen. As we went slowly along the Frenchman I was with pointed out the Weaver birds' nests, saying that they always hung them near wasps' nests, and indeed one could see the wasps flying about and their nests too."

**Dragonflies captured by European and British Birds.** By the Rev. F. C. R. JOURDAIN, M.B.O.U.

Prof. POULTON said that his friend, writing 16 Dec. 1933, had kindly sent the following observations which, in view of the scarcity of recorded prey from among the Odonata, were well worth communicating to the Society.

"I have seen Black Tern (*Chlidonias n. niger* L.) chasing and capturing Dragonflies on Naarder Meer in Holland. I think the species was the Demoiselle (*Calopteryx virgo* L.), but the observation was made at some distance with glasses.

"In *Country Life*, 14 Oct. 1933, p. 399, there is a photograph by Miss Pitt of a ♂ Spotted Flycatcher (*Muscicapa s. striata*) bringing a Dragonfly to the ♀ at the nest. She describes the Dragonfly as blue winged, so I expect this is also *C. virgo*. The insect is very plainly visible in the photograph."

**A Note on the Eggs and Breeding Habits of *Salda littoralis* L. (Heteroptera, SALDIDAE).** By MAUD D. HAVILAND BRINDLEY,\*

On June 30th, 1932, I collected a few *Salda littoralis* on the salt marshes at Cley in Norfolk. After mating, one female was placed in a petri dish provided with a lump of mud, and four days later eight eggs were deposited. The egg of *S. littoralis* is elongate-oval, and slightly curved and pointed at the posterior pole. Ekblom (1926, *Zool. Bidrag, Uppsala*, 10) has described the egg of *Salda saltatoria* L., and Hungerford has given an account of some American species, but neither mentions the existence of a so-called "micropyle" region, comparable to that found in most heteropterous eggs. In *Salda littoralis*, on a small area at one side of the hinder end of the egg, the otherwise smooth surface of the chorion is longitudinally marked with fine ridges or corrugations. This arrangement is quite distinct from that found in other bugs' eggs that are known to me; but sufficient material is not yet available to determine whether it occurs in all SALDIDAE. The margin of the striated area is

\* Communicated by Prof. E. B. Poulton, F.R.S.

not well defined, and it may therefore easily be overlooked. If this character occurs throughout the family, the egg-form of the SALDIDAE is quite distinct from that of the GERRIDAE and VELIIDAE which from previous accounts it seemed to resemble.

The eggs were inserted in the wet mud with the posterior pole protruding slightly from the surface. Oviposition was observed in only one case, and there the bug backed up against a sloping surface into which the egg was rapidly thrust home with a jerk of the abdomen. The dish was covered and the contents kept moist at room temperature. In seven out of the eight eggs, development took place, and at the end of August, the red pigmented eyes and limbs of the embryos were visible through the transparent chorion. They remained in this state throughout the winter, and in the middle of the following March two nymphs hatched out. The latter both died in the second instar, probably because I did not provide them with suitable food. There was no change in the remaining eggs; and when in August 1933 I opened one at random, it contained a healthy embryo, apparently in the same stage of development as in the previous winter. Unfortunately in September, during my absence from home, the dish was accidentally disturbed and the remaining eggs were desiccated and destroyed. These eggs had been incubating for 14 months, and but for this unlucky accident, there is no reason to suppose that they might not have continued in the same state of suspended development until the following spring. From the account of Butler (*Biology of the British Hemiptera-Heteroptera*) and judging from my own observations at Cley, the nymphs of *S. littoralis* occur from March until June, and the imagos for the four months, May to August. There are no records for other months of the year. From this it is reasonable to infer that eggs laid the previous summer hatch out in March or April, and that the duration of nymphal life is about two months. There is not sufficient evidence to determine whether any exceptional individuals hibernate; but the eggs must certainly overwinter in the mud at the edge of the tidal ditches in the marshes, and there must be subjected to all extremes of submersion, desiccation, heat and cold, during their eight or nine months of development. It would be interesting to know whether under unfavourable conditions in the open the eggs are able to pass over the usual time for hatching, and exist in a state of suspended development until the second spring comes round, as the behaviour of these laboratory specimens seems to suggest. Next summer it is hoped to obtain further material to test this possibility.

#### ***Glossina* and Climate—Studies in the Laboratory.** By Professor P. A. BUXTON.

Investigations performed by the author and Mr. D. J. Lewis during 1933 at Gadau in the north of Nigeria were described. At this place and at Sherifuri, which is not far away, detailed studies of *Glossina morsitans* and *tachinoides* have been made in the field by Lloyd, Johnson and others. In the investigations which were described, an attempt was made to analyse the field observations by experiments in the laboratory in which temperature, humidity and opportunities for feeding were controlled. It appears that, by these experimental methods, a considerable advance could be made in our understanding of *Glossina* and, in particular, of the effect of climate upon wild populations of these insects.

The results of the investigations will be published at length elsewhere.



**New or rare African butterflies.** By Professor HALE CARPENTER, M.B.E.

A new form of *Liptena rubromacula* Hawker-Sm. mimicking *Vanessula milca* Hew.

Four *additional* specimens were exhibited of the Lycaenid of which the first specimen was shown on 18 Oct. 1933. All were males.

These more recent specimens are from the same forest on the west coast of Lake Victoria, known as the Malabigambo forest, and were also received through the kindness of Mr. T. H. E. Jackson, F.R.E.S., who had collected them.

Since the first exhibit Professor Carpenter had seen a specimen of *Liptena rubromacula* Hawker-Sm. (1933, *Stylops*, 21 : 9) in the Joicey collection, and it was clear that Mr. Jackson's specimens, which all agreed in appearance, must be assigned to this species, although sufficiently distinct to receive a name. They may well be an eastern race, for the two Joicey specimens, both males, came from the Congo area.

It is proposed to call this new race **jacksoni** in honour of its discoverer, who has done much to increase our knowledge of East African Lepidoptera.

***Liptena rubromacula jacksoni*, forma n.**

Differs from the type by the increased amount of orange on the fore-wing, and in considerable mottling of the underside of the hind-wing, by which differences a strong resemblance is produced on both surfaces to *Vanessula milca* Hew.

*Fore-wing, upperside.* The orange band extends forwards to cellule 5, whereas in the type the coloured spots are in cellules 1*a*, 1*b*, and 2 only, with a very slight suffusion in cellule 3. The band is also much wider, reaching a breadth of 4 mm. in cellule 1*b* where it is widest; the spot in cellule 5 is 2 mm. wide.

On the hind-wing, above, there is no difference in the shape and size of the orange area. On both wings, however, the colour is distinctly more yellow and of a less reddish-orange than in the type.

*Under surface.* The fore-wing shows greater breadth of the orange band than on the upper surface, it measures 5 mm. in cellule 1*b*, and 3 mm. in cellule 5. There is also a small orange spot in cellule 6 touching one on the costa, so that the band extends from costal to inner margin.

The black submarginal band is mottled along its outer edge from cellule 2 forwards with paler, yellowish, markings of which the largest are in cellules 6 and 7 : these are just visible in the type as minute paler spots in cellules 2, 3, 5, 6, 7, but not in cellule 4. A similar enlargement of minute paler markings is shown on the hind margin where there is a series of lunate pale yellowish markings, largest at the costal angle. The central paler band of the hind-wing is considerably paler than that of the fore-wing, and sends radiating streaks across the submarginal black.

Tips of antennae orange : in the type of the species they are missing.

Length of fore-wing, 15 mm.

Five specimens (type and paratypes) from Katera, Malabigambo forest, W. coast of Lake Victoria, Uganda. All males. T. H. E. Jackson, October, 1932 (2); November, 1933 (3).

***Charaxes pythodoris pallida* forma n.**

The specimen exhibited was captured by Mr. Gerald Swynnerton, who kindly presented it to the Hope Department, Oxford University Museum. It was taken at Kazi-kazi station on the Central Railway in Tanganyika Territory, at an elevation of about 4000 feet, in October, 1932. The chief difference from other forms is shown by the light colour of the darker parts of the wing which instead of being deep black,

or brownish-black, is light brown. On the hind-wing the border is of more uniform outline proximally than in the other two forms in which it is narrower behind vein 7 and somewhat indented by the central blue; it is 9 mm. broad at vein 7, the same at vein 4, and 6 mm. at vein 2. The pale central parts of both wings are bluish-white, the amount of blue being very much less than in the other two forms. The blue is more decided on the fore-wing over the situation of the large black mark on the underside at the base of area 1b, and on the hind-wing in the cell and along the proximal edge of the dark border.

The pattern of the pale markings on the fore-wing is that of *p. pythodoris* rather than of *p. nesaea* Smith, but there is a triangle of pale blue filling up the basal angle of area 2.

The under surface is characterised by diminution of conspicuousness of the linear black markings, and a much lighter brown ground-colour. The large black marks on the fore-wing in area 1b are as in other forms.

#### A female of *Pseudathyma plutonica* Btlr.

The genus *Pseudathyma*, closely allied to *Euptera*, is of extreme rarity and very little known. Seitz names four species, which are represented in the National Collection by individual specimens. Mr. T. H. E. Jackson, F.R.E.S., kindly presented to the Oxford University collection a butterfly captured by him in November 1933 which he suggested was probably a *Pseudathyma*, and proved, by comparison with the male in the British Museum, to be the female of *Ps. plutonica* Btlr., strongly resembling *Neptis agatha* Stoll exhibited with it, and taken in the same forest.

All species of *Pseudathyma* strongly resemble *Neptis*, and their great rarity suggests that they are Batesian mimics.

Professor Carpenter said that in 1915 he had spent several months at a post in the same general locality as that in which Mr. Jackson had collected, namely the Malabigambo forest on the west coast of Lake Victoria in Uganda, and had even collected *Neptis* systematically and wholesale, without finding *Pseudathyma* among them, so that Mr. Jackson was to be congratulated on his good hunting.

#### *Lachnocnema exigua* Holl.

Four males and a female of this little-known species were captured by Mr. Jackson in the same locality as the last, and presented by him to the Oxford University collections. One male bore the date October 1932, the other specimens, November 1933. Seitz, somewhat quaintly, states that this species "is known only in the female" but gives a figure of the upperside of the male! The latter is uniformly brown on the upperside whereas the female has the greater part of the wings pure white, with a broad black margin. The female was sent by Mr. Jackson as one of a group of LYCAENIDAE of very similar appearance found in that locality, of which two species were exhibited with it: *Liptena confusa* Auriv. and *Pentila kirbyi* Auriv. The latter species is not uncommon, and it seems possible that it may be a model for the *Liptena* which is rare. The *Pentila* has a conspicuous black spot in the centre of the hind-wing which is less strongly shown in the *Liptena*, and absent in the *Lachnocnema*. Seitz gives the Ogowe and Kuilu Rivers, French Congo, as the



locality for *L. exigua* and its presence in Uganda is therefore of geographical interest. The species is represented in the National collection by a single female.

The male *L. exigua* being apparently little known, the following notes on its appearance are recorded. Upperside dark brown without markings, like *bibulus* F. The under surface has a light brownish-grey ground-colour, but on the fore-wings areas 1a, 1b, and 2 are paler grey. The apex of the fore-wing is of the same paler grey, while the posterior half of the cell is darker brown than the rest. There is an outer row of five marginal spots, black, with silver centre, one in each area from 2-6, and an inner, less well-marked row of two in areas 4 and 5, and sometimes a third in 6 very poorly marked. On the hind-wing there is a conspicuous patch of black, brown, and silver mingled, formed of two rounded marks in the cell and one at the base of 1a and 1b close to the others. Along the costa is a row of three brown spots, with silver spangling in between. Along the hind margin, from the anal angle to area 5, there is a series of silver-centred black spots, one in each area, and between this series and the dark patches in the cell and at the base of 1a and 1b is an irregular line of brown spots faintly spangled with silver. The margin of the wing is almost white at the ends of areas 6 and 7.

**Evidence of attacks of birds upon butterflies.** By Professor HALE CARPENTER, M.B.E.

The following specimens bearing imprints of beaks, were exhibited.

(a) *Lachnocnema exigua* Holl.

One of the males mentioned above. The right fore-wing has the apex missing, and the torn margin rubbed. Two separate marks project forwards and inwards from the anal angle, in slightly different directions: that pointing most to the centre reaches the costa, and is the clearest. It agrees in shape and size with fig. L, plate 1, of 1933, *Trans. R. ent. Soc. Lond.*, 81; and is equally well shown on both surfaces of the wing.

(b) *Acraea bonasia banka* Eltr. (ACRAEINAE).

A male captured by Mr. (now Sir Arnold) Hodson in S.W. Abyssinia 15 Jan., 1925, at Humo in Maji Province. It has evidently been seized when at rest, for the mark is clearly defined on the left fore- and hind-wings, and can be more faintly seen on the right wings in corresponding positions. The mark is more slender than in the last case, and corresponds to fig. X on the plate mentioned. The mark on the fore-wing projects forwards and inwards from the anal angle into the cell, and on the hind-wing forwards from the wing-margin at vein 2.

(c) *Charaxes zoolina neanthes* Hew. (NYMPHALINAE).

A male: by the same captor in S.W. Abyssinia on 30 September, 1925, at Tirma, at an elevation of 3900 feet. The outer edges of both fore-wings are cut off, more cleanly on the right than the left, and on the right side a mark projects inwards from veins 3 and 4 to the anterior angle of the cell. The mark is less clearly defined than in other cases and there is a good deal of rubbing around it: it corresponds with fig. F on the plate mentioned. It is very clearly shown on the under surface.

(d) *Neolycaena cissus* Godt. (LYCAENINAE).

Also from S.W. Abyssinia, taken by the same captor at 6000 feet below Gore, on 18 December, 1926. Two long, slender marks on the right fore-wing project forward from the anal angle, the outer mark being shorter and less well-defined.

They are faintly visible on the under surface. In character they agree with the figure of the mark made experimentally by a Bee-eater's beak on the plate mentioned.

(e) *Hirsutis megara* Godt. (LYCOREINAE).

A male captured in August 1917 in Trinidad, W. Indies, and presented by Mrs. H. Turner. There is an extraordinarily clear impression on the left fore-wing, extending from the anal angle forwards to the end of the cell where it ends in a small circular puncture. Through the kindness of Dr. Percy Lowe, of the British Museum, it had been possible to identify with a fair degree of certainty the type of bird that had made the attack, as *Myiarchus ferox* Bartlett (TYRANNIDAE), the imprint of the beak of which, on soft paper, corresponds very closely to the impression on the wing, with the same puncture at the angle.

### Wednesday, 21st March, 1934.

Dr. S. A. NEAVE, O.B.E., President, in the Chair.

#### *Election of Fellows.*

The following were elected Fellows of the Society :—The Rev. A. H. MAURICE T. BECKETT, O.B.E., The Presbytery, 42, Cranleigh Villas, Kenton, Harrow, Middx.; KRISHNA BEHARI LAL, Chandra Bhawan, Azamgarh, U.P., India; M. R. CHAKRA-TONG TONGYAI, Department of Entomology, Cornell University, Ithaca, N.Y., U.S.A.

#### *Exhibits.*

The following communications were then made.

**The " Danske Atlas " of Bishop Erich Pontoppidan.** By A. W. MCKENNY HUGHES.

The Society has recently purchased for its Library a copy of Volume I of Pontoppidan, E. " Den Danske Atlas, eller Konge-Riget Danemark," &c. 1763. Since this work is of great rarity and but few copies are known, the following remarks concerning its author are possibly not without interest.

Bishop Erich Pontoppidan was born at Aarhus in 1698 and died in 1764. He studied Theology at the University of Copenhagen and, after ministering to the needs of several parishes of Sleswig and Holstein, was appointed Chaplain to the King of Denmark in 1735. Three years later he became Professor of Theology at his University, to become Chancellor in 1755, having, in the meantime, been appointed Bishop of Bergen in 1747.

Pontoppidan was a member of the Royal Society of Copenhagen and the Imperial Academy of Sciences of St. Petersburg.

He wrote extensively on Theology and Archaeology besides his well-known works on the Natural History of Norway and of Denmark.

It was during a stay in Norway that his early taste for Natural History and Archaeology was developed, which resulted in his work on the Natural History of Norway. This work, an English translation of which is in the Library, is to-day mainly of interest by reason of the accounts of " Mer-men " and " Sea-serpents," which the author not only describes and endeavours to prove to be of physical existence in Norway, but gives two amusing, if highly improbable, figures to justify his statements.



This work was followed by the much more ambitious "Danske Atlas." This is the first attempt at a description of the whole of Denmark, and is still considered by many to be the most important topographical work in Danish literature. Volume I, which is the volume more immediately under consideration, contains the account of all the natural products of the country including the animal kingdom, which occupies a substantial part of the volume. The lists of animals contain many additions to the Danish Fauna, and several species are described here for the first time. It is believed that Pontoppidan received some assistance from Brännich in the preparation of the list of insects and also from Capt. Teilman, a very keen collector of the period, and a number of species described by Brännich in his "Prodromus insectologiae siaellandicae," 1761, are figured by Pontoppidan in his work for the first time.

Perhaps naturally, in view of the immensity of the work, much of the book is mere compilation, but its effects on the science of its time were great and lasting. The only other copy of the original work which has so far been traced in London is a complete copy of the 7 volumes in the British Museum Library at Bloomsbury, which came from the Sir Hans Sloane Library. I am indebted to the Registrar for my facts.

**A film of the American Purple Martin, showing its fearlessness of man in conditions of complete freedom and the validity of feeding experiments with insects. By Prof. POULTON.**

Prof. POULTON communicated the film showing the Purple Martins (*Progne purpurea* L.), referred to in our 1933 *Proceedings* 8: 96-97, and kindly presented by Miss E. A. Oehlenschlaeger to the Hope Department, Oxford University Museum. The tameness and freedom of the birds, which had fallen or been turned out of their nests and had been adopted by man, was very evident in the pictures, and led to the conclusion that their food preferences, as described in the 1932 (1933) *Proceedings*, 7: 98-100, were entirely natural. The description of the young Martins' behaviour was quoted from letters kindly written by the donor. All the photographs were taken in 1931, at the "Hummocks," Milwaukee, U.S.A.

The first picture showed the tameness of a single Purple Martin which fell out of a nest in the house colony on 10 July, 1931. "Without any effort on our part it adopted the entire family for two and a half days, accepting any insects which we could catch and helping itself to all it could find—always on the lawn. When we stepped out-of-doors the bird would promptly fly towards us and always alight directly at our feet. It loved to get under a sprinkler on the lawn for a good shower-bath and would then settle on some point of vantage to preen. About the middle of the third day it simply flew off with the rest of the colony birds." The film showed this bird on the shoulder and head of Miss Oehlenschlaeger's young friend John Taylor—moving about and freely accepting his caresses.

The following section photographed 13 September shows one of the "Martin Quartet" \* flying to Miss Oehlenschlaeger's hand and feeding from a dish on the

\* Described in *Bird-Lore*, 34: 245-252, July-August 1932; also, with further details concerning the insects accepted and refused, in 1932 (1933) *Proc. ent. Soc. Lond.*, 7: 98-100.

table. "This picture was taken two days before the bird migrated. It shows so charmingly the 'begging'—the wings in motion and the beak stretched wide open for a worm."

"The next group, taken 15 August, shows Mr. Taylor with the entire quartet. It does not need much explaining. The birds are eating, drinking and bathing, and to us all it has an irresistible charm—in addition to proving their entire freedom."

"The last group on the film was taken about 2 August and shows 'Lindy' alighting out of the blue on my arm, and the 'Baby,' important small person that it always was, running along the awning as fast as it could to some worms held out to it."

Prof. Poulton wished in conclusion to thank Mr. K. Morris for kindly projecting the film with his apparatus.

#### Further instances of "homing" in Lepidoptera. By Prof. POULTON.

Prof. POULTON said that his friend Mr. W. Parkinson Curtis, F.R.E.S., had kindly directed his attention to an observation by E. A. Fitch, well remembered by him as one of our Secretaries in 1884 when he joined the Society. Mr. Fitch recorded (21 March, 1882) in the 1882 *Entomologist*, 15: 91, under the heading "Fixity of Tenure by a Moth," that a specimen of *Taeniocampa gothica* L. had "for the last three days . . . occurred in a similar position outside one of the window-frames of my dining-room." He added that the resting position was "unoccupied each evening when presumably the moth was absent on business." Also that it was not there on the day when he wrote.

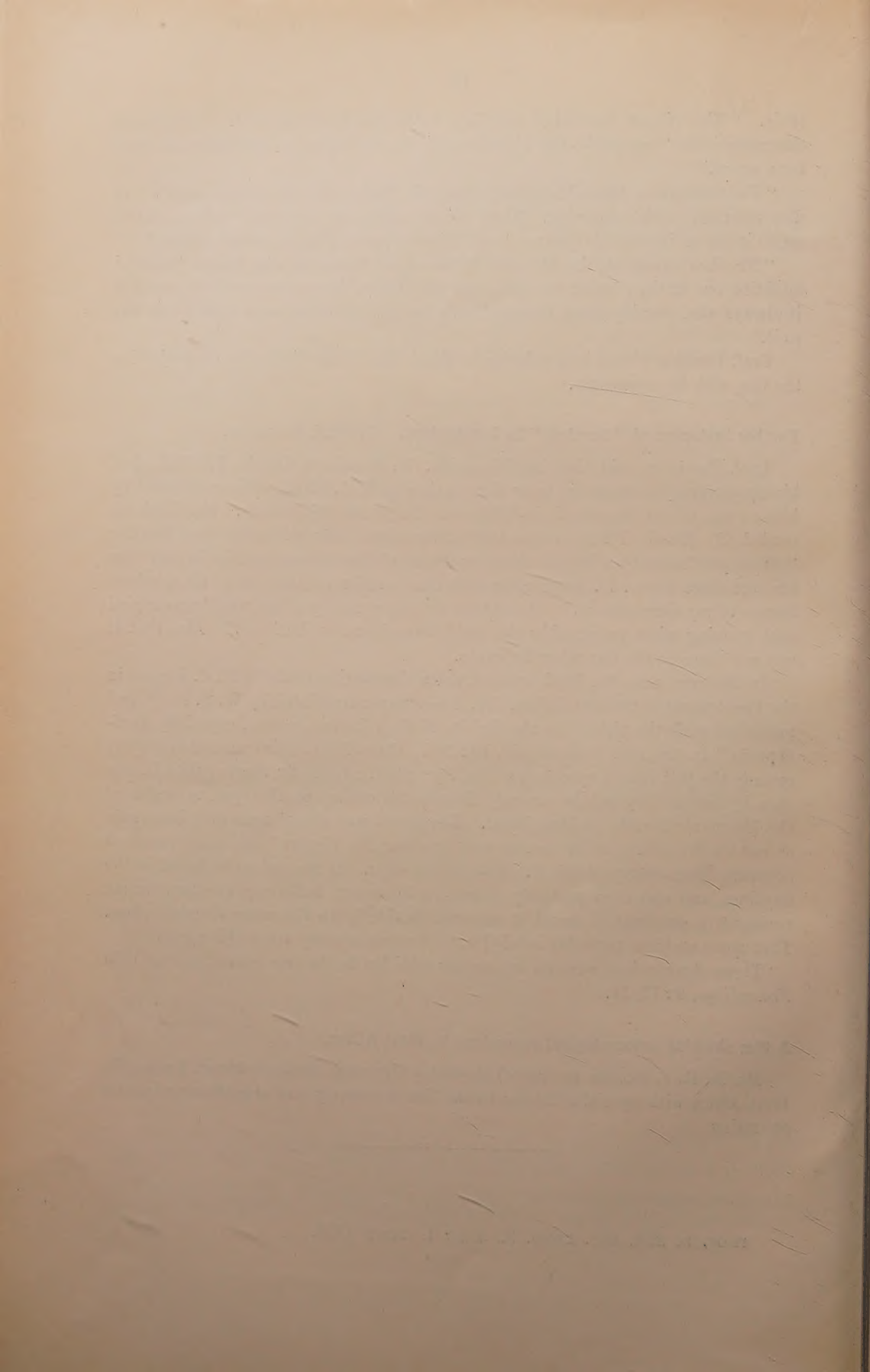
In the same note Mr. Fitch referred to an observation made by M. C. Piepers in the Proceedings of the Dutch Ent. Soc., 19—a paper translated by W. F. Kirby and published with the title "On the Habits of East Indian Insects, especially Lepidoptera," in the 1877 *Entomologist*, 10: 266. On p. 270 of this translation Piepers records the fact that a specimen of the Nymphaline butterfly *Precis iphita* L. was seen by him resting on the strongly illuminated ceiling of the open verandah of the Harmonic Society at Manghasar. The insect was absent next day, but again at rest on the ceiling in the evening and later on; for Piepers "had the pleasure of admiring the memory of this *P. iphita* for six days. It was not to be found in the daytime, and was then probably absent on business; but every evening, for six consecutive evenings, I found it returned faithfully to the same sleeping place. Then some accident probably befel[] it, for I never saw any trace of it again."

These observations were an interesting addition to the two quoted in our 1933 *Proceedings*, 8: 13, 14.

#### A film showing entomological excursions in West Africa.

Mr. K. R. S. MORRIS (a visitor) showed a film made during a recent journey in West Africa with special reference to the Tsetse country and also showing locusts swarming.





# THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

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## THE FELLOWSHIP AND FEES.

Fellows pay an Admission Fee of £3 3s. The Annual Contribution of £2 2s. is due on the first day of January in each year, and is payable in advance.

Fees should be paid to the Treasurer, at 41, Queen's Gate, S.W. 7, and *not to the Secretary.*

Fellows desiring to pay their Annual Contribution through their bankers can obtain an official form of banker's order by applying to the Treasurer.

Fellows whose Contributions for the current year have been paid are entitled to receive the Transactions and Proceedings of the Society free of charge. Further copies may be purchased at reduced prices by applying to the Secretary.

Forms of application for Fellowship, copies of the Bye-laws and the List of Fellows may be obtained from the Secretary.

## MEETINGS AND EXHIBITIONS.

Intending exhibitors are required to send in their names and the nature of their exhibits to the Secretary *before noon* on the day of the meeting, in order that they may be called upon from the chair. Descriptive notes of all exhibits should be handed to the Secretary *at the same meeting* for printing in the Proceedings. If the epidiascope is required, 24 hours' notice must be given.

Fellows resident abroad, or who are otherwise unable to attend, are reminded that any specimens, notes, or observations they may send to the Secretary will be considered by the Council, with a view to exhibition or reading at the meetings of the Society.

## PAPERS AND ILLUSTRATIONS.

Fellows desiring to communicate papers to the Society must send the manuscript of such papers to the Secretary, 41, Queen's Gate, London, S.W. 7, at least fourteen days prior to the date of the meeting at which it is proposed that such papers shall be read. Authors desiring their papers to be published in the Transactions must submit the manuscript, and proposals for illustrations, if any, to the Secretary at least fourteen days before the meeting of the Publication Committee at which it is desired such papers should be considered.

Authors proposing to illustrate their papers should communicate with the Secretary before the drawings are executed. The size of the finished work on plates should be limited to  $7\frac{1}{2}$  ins. by  $4\frac{3}{4}$  ins., after allowing for reduction, if any.

Attention is called to the Instructions to Authors issued with Part I of each volume, which may also be obtained at the Office of the Society. Inattention to these regulations may involve an author in considerable expense.



## MEETINGS

TO BE HELD IN THE SOCIETY'S ROOMS

41, QUEEN'S GATE, S.W. 7

### 1934.

Wednesday, October	...	...	...	...	...	...	3
" "	...	...	...	...	...	...	17
" November	...	...	...	...	...	...	7
" "	...	...	...	...	...	...	21
" December	...	...	...	...	...	...	5

### 1935.

" January (Annual Meeting)	...	...	...	...	...	16
" February	...	...	...	...	...	6

*The Chair will be taken at Eight o'clock.*

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## THE LIBRARY

is open to Fellows, and their friends when accompanying them, daily from 10 a.m. to 6 p.m. (Saturdays, 10 a.m. to 1 p.m.). On the nights of meetings it remains open until 10 p.m. The Library is closed during September.

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## NOTICE

Fellows are informed that they can have their Transactions bound at the following prices by the Society on application to the Secretary.

Cloth : old size, 4s. 3d.; new size, 5s.

Buckram : old size, 4s. 9d.; new size, 5s. 6d.